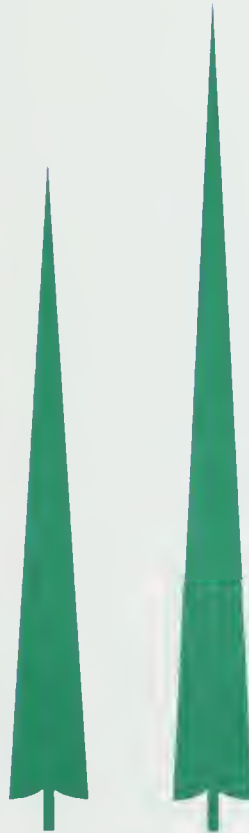


*Ontario's
Progress
in
Pollution
Prevention*





Ministry of Environment and Energy
Program Development Branch
Pollution Prevention Office

August, 1997

Ontario's Progress in Pollution Prevention

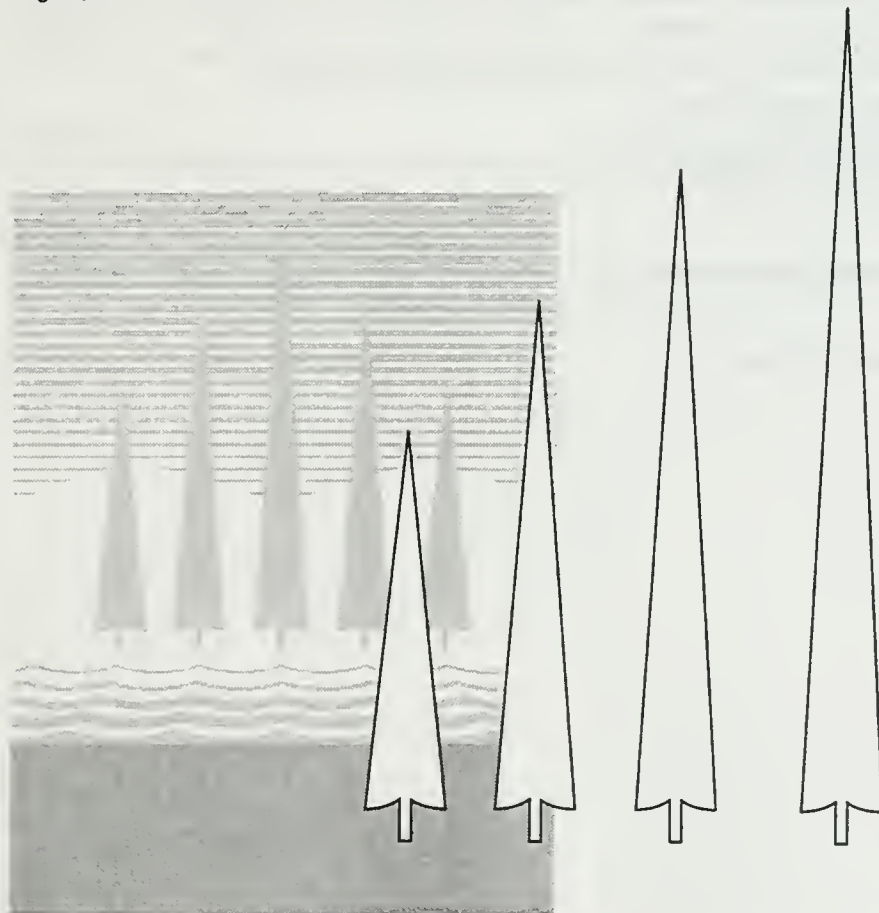
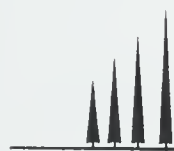


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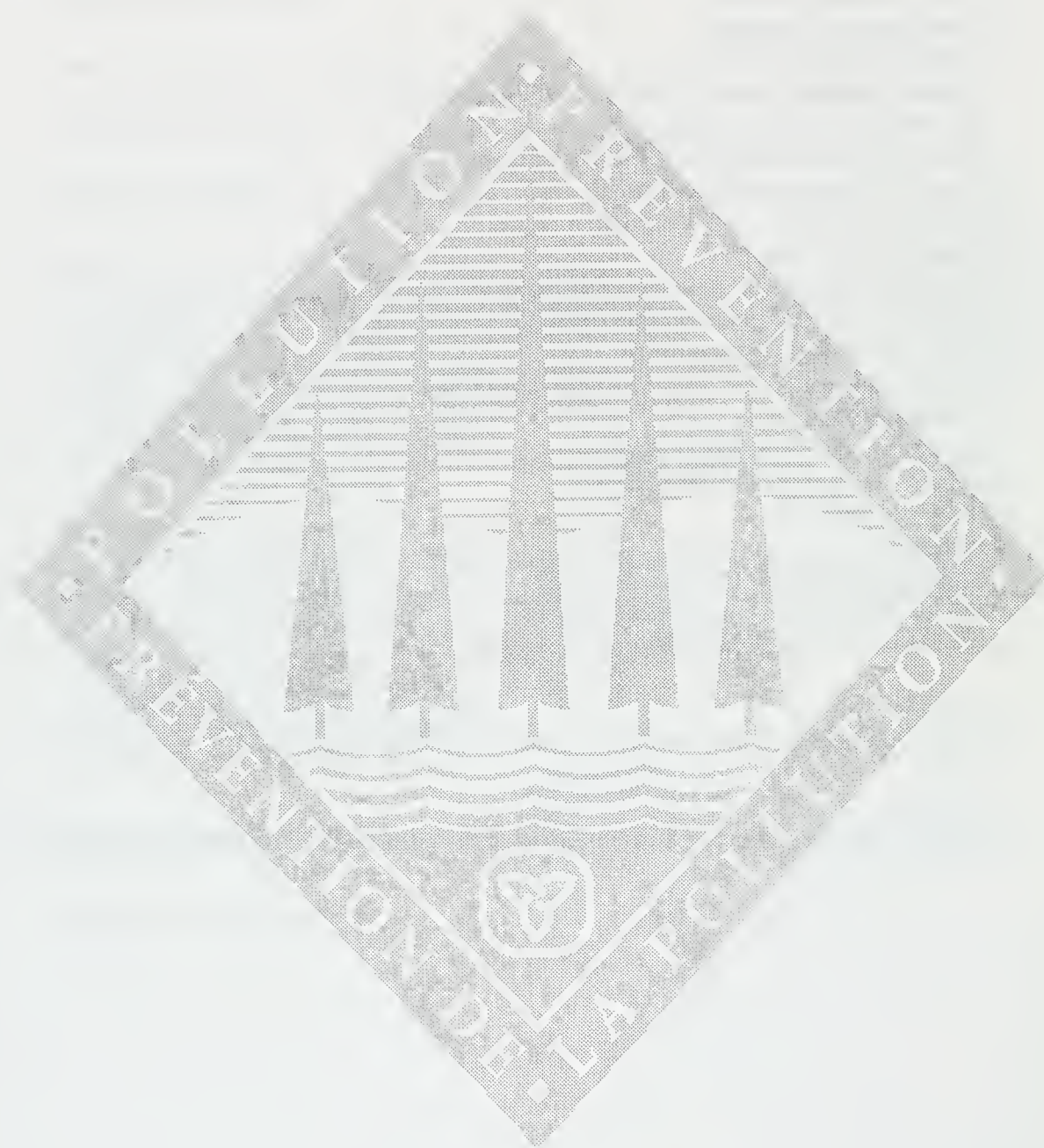
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Message from the Minister

The Ontario government believes that protecting the environment is essential to the creation of healthy, clean and prosperous communities. At the Ministry of Environment and Energy, we see pollution prevention as the best way to meet the province's environmental goals and establish more healthful communities while improving our economic competitiveness.

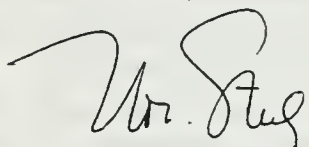
This report shows that pollution prevention is working in Ontario. In these pages, we illustrate how this strategy is helping efficient, environmentally sound businesses and industries to significantly reduce the use of toxic substances and the generation of wastes.

In documenting Ontario's progress in preventing pollution, the report summarizes the successes achieved through voluntary partnerships, the Pollution Prevention Pledge Program, education and training efforts, and a number of other initiatives in which the ministry is playing a leading role.

I am heartened to see the contributions being made by our partners in industry, commercial operations and institutions, municipalities, communities, industry associations and non-governmental organizations. These partners are leading the voluntary shift away from traditional, reactive approaches to dealing with waste materials.

This report is cause for hope. It shows the extent to which pollution prevention is being embraced in this province. This is great news for the environment and for the people of Ontario, today and for generations to come.

Sincerely



Norman W. Sterling
Minister



Executive summary

Pollution prevention offers significant advantages over traditional environmental management techniques. The focus is on anticipating and preventing pollution, reducing the use of toxic chemicals and minimizing the generation of industrial wastes. While these activities result in significant progress in the protection and preservation of the ecosystem, they also provide opportunities to improve operating efficiencies, reduce operating costs, decrease environmental risk and limit liability.

The objectives of pollution prevention have been successfully pursued through a number of innovative partnerships with various client groups, private companies, municipalities and other ministries and government agencies. MOEE also promotes pollution prevention through incentive/recognition programs, through training and education efforts and through its own leadership.

Voluntary pollution prevention partnerships

Voluntary pollution prevention partnerships are designed to encourage and support the development and implementation of pollution prevention projects within industrial, commercial, community and government sectors. Under these agreements, considerations of environmental management and pollution prevention are incorporated into business plans and reductions are made in the toxic substances used, generated and released. Partnerships also promote and increase awareness of pollution prevention principles.

To date, Memorandums of Understanding (MOUs) have been developed with five business sectors as well as the Regional Municipality of Hamilton-Wentworth. These have resulted in publicly reported reductions of wastes generated and/or the use and release of toxic substances. The partners have also developed pollution prevention planning models and implementation strategies which can be used by other companies, sectors, municipalities and agencies.

Participation and reductions reported in the use, generation and release of toxic substances and wastes (through MOUs) are summarized in the following table:

Progress in pollution prevention			
<i>Sector</i>	<i>Number of facilities</i>	<i>Number of case studies</i>	<i>Tonnes/year</i>
Auto Parts Manufacturers	8	22	660
Canadian Chemical Producers	11	15	12000
Metal Finishing	17	14	287
Motor Vehicles Manufacturing	28	66	152000
Printing and Graphics	7	2	52

Additional partnership agreements have been developed with seven other sectors and organizations. These agreements differ from MOUs in that they are not delivered through formalized agreements. In addition, pollution prevention may be only one of

several objectives (which may also include improvements in waste handling, business management, worker health and safety or other areas). Success is not measured only in terms of toxic reductions, but also through accomplishments such as:

- ◆ participation levels;
- ◆ the provision of training programs and workshops;
- ◆ the development of guidance manuals, videos, newsletters, codes of practice, studies, inventories;



- ◆ the development and implementation of pollution prevention plans, environmental management systems, improved operating practices, environmentally sound business practices, best management practices;
- ◆ supplier participation, knowledge sharing and other outreach activities.

The objectives, participants, implementation history and progress made to date under individual MOUs and other partnership agreements are summarized in the voluntary pollution prevention partnerships section.

Pollution Prevention Pledge Program (P⁴)

MOEE's P⁴ initiative acknowledges the environmental achievements of industrial, commercial, institutional, community and government enterprises. The program is designed to encourage the voluntary adoption of pollution prevention and pollution prevention planning throughout the province. Recognition is given to facilities that have achieved reductions (or have planned reductions) in: the release of chemicals to the environment, the use of toxic chemicals, and/or the generation or disposal of hazardous and liquid industrial wastes.

As of December 1996, 195 sites have enrolled in the program. Of these, 75 sites have registered at the P¹ level and 120 sites have registered projects beyond the P¹ level. Total reductions achieved and reported through this program, at the P³ and P⁴ levels, account for 30,000 tonnes per year. Some of the award-winning programs carried out under the P⁴ initiative are summarized in the P⁴ section of this report.

Education, training and tools

The objective of this aspect of the ministry's program is to develop and deliver training and educational programs, that promote the adoption of pollution prevention by facilities at an operational level. These programs provide practical instructional tools for industrial, commercial and government sectors,

Four types of education and training are undertaken: awareness training, practical tools training, hands-on, how-to training and train-the-trainer training. These are provided to: business and industry partners, municipal and community groups, educational institutions, conferences and workshops, international forums and internal ministry staff. Delivery and funding of education, training and educational tools are provided by various groups, often through a partnership with MOEE.

Pollution prevention guidebooks, environmental management systems, case studies, videos and codes of management practice have been developed to aid client groups in their efforts to improve environmental quality and minimize pollution and wastes. A number of these initiatives are described in the section on education, training and tools.

Ministry leadership

The goal is to incorporate pollution prevention and environmental management principles into government programs, policies, projects and legislation. A number of MOEE activities and projects now have a pollution prevention component and have demonstrated that pollution prevention can effectively be integrated with other tools of environmental protection. These programs and activities are summarized in the section on ministry leadership initiatives.



Why pollution prevention?

Pollution prevention is defined as the reduction or elimination of pollutants or wastes at the source. It includes activities which encourage, promote or require changes in the behavioral patterns of industrial, commercial, institutional, community and government generators and individuals. Pollution prevention includes practices that eliminate or reduce the use of hazardous and nonhazardous materials, energy, water or other resources, as well as those measures that protect natural resources through conservation or more efficient use.

Community and environmental benefits:

- ◆ Minimizes and prevents the creation of pollutants and wastes through avoidance, reduction or elimination at source.
- ◆ Ensures a comprehensive, planned approach to the environmental management of industrial sites.
- ◆ Promotes proactive environmental management.
- ◆ Results in integrated decisions affecting land, air and water.
- ◆ Enhances corporate image and community relations.
- ◆ Enhances community and employee health.
- ◆ Improves worker safety.

Economic benefits:

- ◆ Improves operational efficiency and reduces production costs.
- ◆ Reduces costs associated with management of wastes, material losses and environmental liability.
- ◆ Complements new environmental management systems (for example, ISO 14000).
- ◆ Focuses research and development efforts in areas where there is the greatest potential for economic and environmental benefits.
- ◆ Reduces costs associated with raising capital.
- ◆ Improves employee morale, teamwork and productivity.

Legislative and regulatory compliance:

- ◆ Reduces the risk of non-compliance.
- ◆ Supports a due diligence defence for employees, officers and directors, in the event of criminal prosecution or civil suit.
- ◆ Reduces administrative costs and resource requirements.
- ◆ Ensures compatibility with international, national, environmental and trade agreements.
- ◆ Facilitates legal, financial and real estate transactions where environmental performance is a factor.
- ◆ Supports air and watershed management planning and protection of natural heritage areas.



Voluntary partnerships

Voluntary partnerships with industrial and commercial associations, member companies, federal and provincial governments, municipalities, institutions and communities support the development and implementation of environmental management systems and pollution prevention programs.

The Ministry of Environment and Energy (MOEE) has entered into a number of formal Memorandums of Understanding (MOUs) and other forms of partnership agreements with stakeholders to encourage compliance and achieve levels of environmental performance that exceed the regulatory minimum. Such partnerships may produce four core products:

- (1) pollution prevention strategies which are sector-specific;
- (2) the internalization of pollution prevention and conservation objectives within business planning and operating systems;
- (3) the development and implementation of pollution prevention plans which are facility-specific;
- (4) the reduction and/or elimination of the use, creation and/or release of hazardous substances and wastes.



Memorandums of Understanding (MOUs)

A Memorandum of Understanding is a formal agreement which is voluntarily entered into and that establishes a partnership among the signatories. These may include ministries of the federal and provincial government, municipalities, industry associations, participating member companies and other stakeholders. Within the context of environmental improvement, the partners establish common goals, develop tools, identify plans, implement projects and undertake training. The purpose, goals, responsibilities, milestones and benchmark accomplishments may be outlined in the accompanying terms of reference.

The signed agreement does not exempt the partners from any regulatory compliance requirement. It may, however, encourage participants to go above and beyond the legal requirements in the implementation and exercise of their environmental programs. The voluntary nature of a MOU permits a signatory to withdraw at any time or allows, upon the consensus agreement of the steering committee which oversees the agreement, new partners to join.

Outreach activities, including public education and information sharing with other sectors, may be an integral part of a partnership agreement. Community, public interest and other non-governmental groups may be asked to review and comment on a MOU and its proposed initiatives.



Automotive Parts Manufacturing Pollution Prevention project

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), Environment Canada, the Automotive Parts Manufacturers' Association (APMA) and its participating member companies.

Under the Memorandum of Understanding (MOU), auto parts manufacturers are developing and implementing plans for voluntary pollution prevention and for reduction in the use of toxics. The goal is to achieve a verifiable reduction of persistent toxic substances and other contaminants of concern that are used, generated or released into the environment.

the story so far ...

PARTICIPATING COMPANIES ...

Bundy of Conado
Burlington Technologies Inc.
Court Industries
Dana Canada Inc.
Long Manufacturing
Springco Industries
Ventra Group
The Woodbridge Group

POLLUTION PREVENTION SUCCESS STORY ...

Dana Canada Inc. powder coats auto parts at its facility in Thorold, Ontario. When the company replaced the methyl chloroform used in its degreasing line, first with a terpene product and then with a water-based cleaner, it eliminated the use of 2,700 kilograms of toxic solvents a year. The changes also cut material costs, increased the useful life of process filters, slashed air emissions and improved the general work environment.

1992

A steering committee was formed to investigate alternative techniques for the management of fluids used in metal working and other pollution prevention opportunities.

1993

The committee reported on techniques for managing metal working fluids which would produce the best results and began public consultation on environmental issues. In December, the APMA, six member companies, the MOEE and Environment Canada signed the Memorandum of Understanding and terms of reference.

1994

Four priorities were identified for attention: cleaning and degreasing, surface coating, chromium plating and management of metal working fluids. The APMA surveyed its members and their suppliers on cleaning operations and the management of metal working fluids. A study was launched to identify the production and control technologies currently being used, the cleaner systems being implemented by industry leaders and the new technologies under development by research and design facilities and equipment manufacturers.

Participating companies began to audit their wastes and environmental releases.

Public consultation continued with environment groups and the general public. Pollution prevention planning, training and environmental issues were covered in a series of workshops.

The first MOU progress report was issued in December. It described ongoing pollution prevention projects, targeted toxic substances for reduction or eventual elimination and set out a pollution prevention planning framework, a facility reporting procedure, training and onsite technical assistance programs and a clean technology program.

1995

The APMA published its survey results, establishing benchmarks for technologies in cleaning/degreasing and the use of metal working fluids. The association initiated a followup survey on surface coating practices.

A series of environmental management system (ISO 14000) workshops were held.

1996

The second MOU progress report, which included case studies and reductions, was released.



the progress to date ...

Five of the participating companies have undertaken 22 pollution prevention case studies and achieved annual reductions of 660 tonnes of toxic substances and other wastes, as well as significant reductions in energy and water consumption.

for more information ...

- ◆ First Progress Report (December, 1994)
- ◆ Clean Production Benchmarking Study of Cleaning/Degreasing Processes and the Use of Metal Working Fluids in the Automotive Parts Manufacturing Sector (September, 1995)
- ◆ Second Progress Report (March, 1996)

For copies or other information on the Automotive Parts Manufacturing Pollution Prevention project, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).

Canadian Chemical Producers' Association MOU

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), the Canadian Chemical Producers' Association (CCPA) and its participating member companies.

The goal of the Memorandum of Understanding (MOU) is to develop a voluntary program of pollution prevention and reduction in the context of environmental improvement and economic renewal. It is being implemented in four stages which entail: (1) preparation of a planning framework, (2) sharing of pollution prevention knowledge, (3) production of specific pollution prevention plans for individual sites, (4) the implementation of those plans.

PARTICIPATING COMPANIES ...

Bayer Inc. (Rubber Division)

CXY Chemicals Canada Limited
Partnership

Dow Chemical Canada Inc.

Du Pont Canada Inc.

Imperial Oil, Chemicals Division

Nova Chemicals

the story so far ...

1994

In February, the CCPA, five member companies and the MOEE signed the Memorandum of Understanding targeting certain toxic substances and wastes. The first stage of the MOU, the development of the planning framework, was completed by November and a report was distributed to the sponsors.

Recommendations for regulatory equivalence, a component of the first stage planning framework, evolved into the Recognizing and Encouraging Voluntary Actions (REVA) program.

1995

A combined MOU stage 2 and 3 report, covering the overlapping topics of developing and sharing pollution prevention plans, was issued in November. The report presented the achievements, to date, of 16 pollution prevention case studies.

The sixth participating company (CXY Chemicals Canada) joined the MOU.

1996

MOEE agreed to the development of a REVA Demonstration Performance Plus program.



the progress to date ...

There are 15 toxic substance and waste reduction projects underway at 11 different facilities. These have resulted in significant cuts in the generation and/or environmental release of benzene, carbon tetrachloride, CFCs, chlorinated solvents, cyclohexane, halons, HMD, methylene chloride, PCBs, propylene oxide, and VOCs.

In addition, the CCPA's aggressive promotion of the ministry's Pollution Prevention Pledge Program (P⁴) has encouraged 23 facilities to join the program.

Reductions achieved through 1995

<i>Substance category</i>	<i>Tonnes per year</i>
Solid wastes	9,500.0
Hydrocarbons	2,372.5
Organic liquids	58.2
Wastewater treatment sludge	2.7
Chlorofluorocarbons (CFCs)	1.7
Total	11,935.1

for more information ...

- ◆ Memorandum of Understanding (February 10, 1994)
- ◆ MOU Stage 1 Report (November, 1994)
- ◆ MOU Stage 2 and 3 Report (November, 1995)
- ◆ REVA - Recognizing and Encouraging Voluntary Actions Report (December, 1995)

POLLUTION PREVENTION SUCCESS STORY ...

A quality performance team at Dow Chemical's Sarnia facility has implemented a leak monitoring and repair program that covers more than 11,000 valves. The company also undertook a chemical substitution program and installed a thermal oxidizer, a closed-loop vent recovery system and a gas turbine combustion chamber with direct steam injection. The environmental benefits have included a 1,800-tonne, or 64 per cent, reduction in hydrocarbons and a 990-tonne, or 41 per cent, cut in NO_x emissions since 1989.

For copies or other information on the Canadian Chemical Producers' Association MOU, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).



Metal Finishing Industry Pollution Prevention project

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), Environment Canada, the Canadian Association of Metal Finishers, the American Electroplaters and Surface Finishers Society, the Metal Finishers Suppliers Association and participating member companies.

The goal of the Memorandum of Understanding (MOU) is to develop voluntary pollution prevention planning projects to reduce the use, generation and/or release of toxic substances.

the story so far ...

1993

Federal, provincial and industry association representatives signed the Memorandum of Understanding in June.

1994

Released in June, the first progress report covered the development and evaluation of pollution prevention assessment and planning tools, internal and external reporting and verification methods and a list of target substances.

Development began on a training approach, that could include workshops, videos, manuals, technical aids and other aids, for delivering pollution prevention concepts to small companies. A contractor was hired to provide onsite technical assistance and several training workshops were held.

1995

Published in April, the second progress report included case studies on eight metal finishing pollution prevention projects. Nine more companies signed up to develop and implement pollution prevention projects and the MOU was renewed with an addendum covering the period until February, 1997.

The Metal Finishing Pollution Prevention Guide was published and a one-day workshop on pollution prevention planning was held in Toronto for 80 companies.

1996

Hands-on training courses continued, the third annual Metal Finishing Industry Pollution Prevention Project Progress Review Workshop was held and the third progress report was released in September.

PARTICIPATING COMPANIES ...

Continuous Colour Coat Ltd.

Delphax Systems

Dovercourt Electro-Plating Co. Ltd.

Dura-Chrome Ltd.

Elite Metal Finishing Inc.

Kuntz Electroplating Inc.

Menasco Aerospace Ltd.

Monroe Auto Equipment Co.
of Canada

Prototype Circuits Inc.

Rauscher Plating Limited

Reliable Plating Ltd.

Specialty Technical Services Ltd.

Strataflex Canada Corp.

Torcad Ltd.

Anti-Friction Enterprises (1985) Ltd.

Aerospace Metal Finishing

Circoflex Corp.



the progress to date ...

Seventeen companies have signed on, to date, to participate in the Metal Finishing Industry Pollution Prevention Project. Reports on eight projects show reductions of 287 tonnes of waste materials, representing annual savings of \$220,000 (see table below).

Reductions achieved through 1995	
Substance category	Tonnes per year
Sodium hydroxide	0.5
Lead making tape	0.4
Alkaline cleaner	15
Chromium hydroxide sludge	25
Sulphuric acid	4
Ferric chloride	9
Chromate solution (concentrated)	1
Acid waste (containing heavy metals)	229
Alkaline waste (containing heavy metals)	2.7
Waste oils and lubricants	0.4
Total	287

POLLUTION PREVENTION SUCCESS STORY ...

Toronto's Torcad Ltd. specialises in zinc plating and phosphating automotive parts, electrical components and hardware. Alkaline cleaning solutions are used extensively on the process lines. In order to reduce the amounts of contaminants discharged to its wastewater treatment plant, the company installed equipment to remove the oils and suspended matter from the spent cleaning solution and then recycle the cleaning solution back to the cleaning baths. In addition to improving the operation of its treatment plant, Torcad saved some 15,000 litres of alkaline cleaner a year and reduced its raw material costs by \$30,000. The estimated payback time for the program is one-and-a-half years.

for more information ...

- ◆ Memorandum of Understanding (June, 1993)
- ◆ First Progress Report (June, 1994)
- ◆ Addendum to Memorandum of Understanding (June, 1995)
- ◆ Second Progress Report (April, 1995)
- ◆ Metal Finishing Pollution Prevention Guide (September, 1995)
- ◆ Third Progress Report (September, 1996)

For copies or other information on the Metal Finishing Industry Pollution Prevention Project, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).



The Automotive Manufacturing Pollution Prevention project

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), Environment Canada, the Canadian Vehicle Manufacturers' Association (CVMA) and its participating members.

Under the Memorandum of Understanding (MOU), automotive manufacturers are developing and implementing voluntary pollution prevention plans. The goal is to achieve a verifiable reduction of persistent toxic substances and other contaminants of concern that are used, generated or released into the environment.

the story so far ...

1991

Work began on developing the terms of reference and the roles and responsibilities of participants.

1992

The Automotive Manufacturing Pollution Prevention Project was announced with the signing of the Memorandum of Understanding. An initial candidate list of toxic substances, time frames and workplan details were drafted. A collection of pollution prevention success stories was published and discussions with U.S. auto suppliers were initiated.

Released in December, the first progress report outlined the list of substances for reduction/elimination and the project's pollution prevention strategy.

1993

Supplier support for achieving pollution prevention goals was sought. A series of workshops between Canadian and U.S. auto makers looked at the progress in their respective environmental initiatives. Technology transfer was promoted among industries.

1994

Released in April, the second progress report covered 15 pollution prevention projects that had achieved total annual reductions of 2,200 tonnes of the contaminants of concern.

Under the renewed MOU agreement, signed in November, the target list of toxics was expanded from 65 to 78 substances (including all those in the Canada-Ontario Agreement). In addition, reporting and verification procedures were improved. Member companies were expected to participate in the Ontario P⁴ Program and to report on their individual projects.

1995

Covering 24 pollution prevention projects, the third progress report showed annual reductions of 126,937 tonnes of toxic substances and wastes.

1996

Covering 26 pollution prevention projects, the fourth progress report, released in June, showed annual reductions of 21,385 tonnes of toxics substances and wastes.

PARTICIPATING COMPANIES ...

Chrysler Canada Ltd.

Ford Motor Company of Canada,
Limited

General Motors of Canada Limited

Navistar International Corporation



the progress to date ...

Participating companies have undertaken 65 pollution prevention projects. To date, these have resulted in an annual reduction of 150,522 tonnes of toxic substances, wastes and other contaminants of concern.

Reductions achieved through 1995		
<i>Substance category</i>	<i>Tonnes per year</i>	
	<i>Pre-1995</i>	<i>1995</i>
Halogenated hydrocarbons	265	0
Non-halogenated hydrocarbons	86	154
Metals	40	193
Volatile organic compounds	1353	1170
Other substances and wastes	127,394	19,868
Total	129,138	21,385

for more information ...

- ◆ Memorandum of Understanding (May, 1992)
- ◆ Addendum to Memorandum of Understanding (November, 1994)
- ◆ First Progress Report (December, 1992)
- ◆ Second Progress Report (April, 1994)
- ◆ Third Progress Report (June, 1995)
- ◆ Fourth Progress Report (June, 1996)

POLLUTION PREVENTION SUCCESS STORY ...

Under the Ford Motor Company's new Total Fluids Management project, the supplier assumed complete responsibility for all the chemicals used within each Ford plant. The project resulted in total annual reductions of 1.8 tonnes of heavy metals, 55 tonnes of solvents, 227 tonnes of paint sludge, and 90,000 tonnes of water. It also saved Ford \$275,000 in costs. The management system is being adopted now by auto makers across North America.

For copies or other information on the Automotive Manufacturing Pollution Prevention project, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).



Printing and graphics sector project

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), Environment Canada, the Ontario Printing and Imaging Association (OPIA), the Printing Equipment Supply Dealers Association (PESDA) and their participating members.

The goal of the Memorandum of Understanding (MOU) is to develop voluntary pollution prevention planning projects to reduce the use, generation and/or release of toxic substances.

the story so far ...

1994

A clean technology committee was formed to compile an inventory of the chemicals and technology used and the wastes generated in the sector. A second committee began to develop workshops, videos, manuals and other training aids to deliver pollution prevention concepts.

In December, members from OPIA, PESDA, MOEE and Environment Canada developed and signed an MOU and terms of reference for a joint pollution prevention planning agreement that targeted toxic substances and wastes.

1995

Training workshops covered government programs, pollution prevention options and clean technology developments in the printing industry. A project co-ordinator was hired to promote pollution prevention to small and medium-sized companies.

A report summarized technical references that could assist in the development of a pollution prevention code of practice for the printing industry.

1996

In April, the first progress report was released. It contained a list of substances for reduction and elimination, a planning framework and a facility reporting procedure, an education and training strategy, an environmental management and clean technology program and a series of pollution prevention case studies.

the progress to date ...

Pollution prevention projects are underway in 23 facilities. Two of these report that they have already cut the use of 52 tonnes of isopropyl alcohol and other solvents a year.

A guidebook has been developed to help small printers assess their compliance status and develop pollution prevention plans and an environmental management software package has been customized for the printing industry.

PARTICIPATING COMPANIES ...

Data Business Forms Ltd.
Davis & Henderson Ltd.
Kwik-Kopy Canada Corp.
Quebecor Printing Canada Corp.
Shorewood Packaging
3M Canada Inc.
Canadian Fine Colour
Du Pont Canada Inc.
Flint Ink Corp. of Canada
Fuji Graphics Systems Canada Inc.
Kodak Canada Inc.
Maratek Environmental
Printing Pollution Control Inc.
Environmental Controls System
Topper Linen Supply System



for more information ...

- ◆ Memorandum of Understanding (December, 1994)
- ◆ Pollution Prevention Video for the Printing and Graphics Sector (November, 1994)
- ◆ Review and Evaluation of the Literature in Pollution Prevention and Code of Management Practice for Printers (July, 1995)
- ◆ First Progress Report (April, 1996)

For copies or other information on the printing and graphics sector project, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).

Comprehensive Municipal Pollution Prevention (CMPP) project

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), Environment Canada and the Regional Municipality of Hamilton-Wentworth.

The goal of the CMPP project is to develop and implement pollution prevention plans in the 18 departments of the Regional Municipality of Hamilton-Wentworth. The project will identify opportunities to conserve water, energy and other resources, improve the use of goods and delivery of services, reduce or eliminate wastes, minimize the negative effects on the environment and achieve cost savings. Through education and training, future decisions will be made with pollution prevention, waste reduction and cost efficiency in mind.

the story so far ...

1993

The Memorandum of Understanding was signed in November. The Comprehensive Municipal Pollution Prevention (CMPP) project consists of five components: (1) an inventory of bylaws, policies and programs; (2) identification of pollution prevention opportunities; (3) development and implementation of pollution prevention plans; (4) production of a generic plan that can be used by other municipalities; (5) evaluation of the implementation of the CMPP.

1995

Inventories of regional activities (such as water, wastewater, waste and fleet management) and areas of influence (such as bylaws, purchasing policies) were completed by April and a final report issued. Work on the opportunities phase continued and several plans were successfully implemented. Others were identified for future action.

Consultants were hired to assist in the following areas: technical assistance in the opportunities and implementation phases of the project, training and education efforts, and the communications strategy.

Key personnel were trained in the principles of pollution prevention as they are applied in a municipal government. These employees provide continued leadership and train other staff in their departments.

1996

Interim project results were reported in a February workshop and A Guide to Pollution Prevention for Municipalities was published later in December.

POLLUTION PREVENTION SUCCESS STORY ...

The municipality's environmental services department redesigned its computerized invoices, cutting the form down from four pages to a single sheet. This reduced the amount of paper used each year by 75 per cent.



the progress to date ...

The first four components of the Comprehensive Municipal Pollution Prevention (CMPP) project have been completed. With the help of their environmental services department, each department in the municipality will be incorporating pollution prevention in their plans.

for more information ...

- ◆ Memorandum of Understanding (November, 1993)
- ◆ Inventory Report, Regional Municipality of Hamilton-Wentworth (April, 1995)
- ◆ A Guide to Pollution Prevention for Municipalities (December, 1996)
- ◆ Report on Opportunities and Implementation (underway)

For copies or other information on the Comprehensive Municipal Pollution Prevention (CMPP) project, contact the Pollution Prevention Office of the MOEE (see Appendix 2 for project officers) or the Hamilton Regional Office of MOEE (at 905-521-7664).



Other partnership agreements

Emery Creek Environmental Association Industrial Community partnership

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), Environment Canada, Metropolitan Toronto, the Great Lakes Pollution Prevention Centre, the Emery Creek Environmental Association and participating local businesses.

The goal of the partnership is to encourage the 2,500 businesses and industries in the Emery Creek watershed to reduce wastes at source. The Emery Creek watershed is the most polluted in Metropolitan Toronto.

the story so far ...

1993

The Emery Creek Environmental Association, a non-profit group composed of local industries, was founded with a mission to raise environmental awareness and, through voluntary participation, to provide sustainable benefits to the area.

1994

Following a kick-off meeting in May, the association sponsored a local litter cleanup program, launched a series of pollution prevention workshops and published the first issue of a newsletter promoting pollution prevention.

An executive director was hired in September to co-ordinate outreach activities and promote membership.

1995

Summer students were hired to visit local businesses (marking their storm drains) and to develop a contact list. More than 700 businesses were made aware of the association. Six more workshops were held and eight issues of the newsletter were published in 1995.

1996

With funding from Environment Canada, the Metropolitan Toronto Works Department and MOEE, the association developed a Pollution Prevention journal to educate local industry about practical pollution prevention technologies and practices and highlight local success stories.

With Industry Canada three workshops were held to introduce environmental management systems to small and medium-sized industries. Some 50 industries were surveyed in a local sector study, part of a wood working/wood finishing sector study. Six summer students were hired to conduct the industrial storm drain marking and business survey for a second year. More than 600 businesses were contacted. Five more environmental workshops for local businesses were held during the year.

for more information ...

Ten newsletters and four issues of the Pollution Prevention journal have been distributed to 2,500 local businesses in the Emery Creek watershed since November, 1994. For copies or other information on the Emery Creek Environmental Association Industrial Community partnership, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).



Environmental management systems training and pollution prevention for hospitals

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), Environment Canada and the Etobicoke General Hospital.

The objectives of the program are to provide a model for pollution prevention planning that can be used by Ontario hospitals and to train hospital staff in pollution prevention planning and environmental management systems. A specific component of the training program is devoted to reducing mercury use in hospitals.

the story so far ...

1996

In March, a needs analysis for a pollution prevention training program was undertaken at Etobicoke General Hospital. With the support of Pollution Probe, a three-phase challenge project for the reduction and elimination of mercury was initiated.

In August, Etobicoke General Hospital, MOEE and Environment Canada signed a pollution prevention partnership. The Great Lakes Pollution Prevention Centre (GLPPC) and Broadhurst Environmental Management were contracted to train hospital staff and co-ordinate production of a pollution prevention plan. Workshops for staff from other health care centres took place in early 1997.

for more information ...

For information on the environmental management systems training and pollution prevention for hospitals project, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).



Food processing sector partnership

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), Metropolitan Toronto and other invited municipalities, the Canadian Meat Council, the Ontario Dairy Council and participating food processing facilities.

The goal of the program is to reduce the discharges of oil, grease and fat to municipal sewer systems. This goal will be achieved through improved operating and management practices.

the story so far ...

1993

A presentation was made to representative of the food processing sector to identify the need for, and requirements of, the program, produce a work plan and request voluntary participation.

1994

At a June workshop, equipment suppliers evaluated and explained the effectiveness of available treatment systems for removing fat, oil and grease from discharges from food processing facilities.

A draft report was prepared on the sources of discharges of fat, oil and grease and their effects on municipal wastewater collection and treatment systems.

1995

A draft, generic Guidance Manual for the Development of Best Management Practices Plans was developed for use by individual processing facilities.

for more information ...

For more information on the food processing sector partnership, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).



Hamilton District Autobody Repair Association (HARA) partnership

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), the Hamilton District Autobody Repair Association (HARA) and its participating members.

The goal of the partnership is to develop and promote environmentally sound business procedures and operating practices within the autobody repair sector. The ministry views this partnership project as a pilot study for the sector. HARA has connections to other local associations in the province which could use and promote to their members the information products developed under the partnership.

HARA is also a member of the VOC (volatile organic compounds) NO_x/VOC Management Plan working group of the Canadian Council of Ministers of the Environment. The autobody and refinishing sector uses up to 20 million litres of solvents and coatings annually, which makes it the second largest contributor of VOCs.

the story so far ...

1994

HARA reached out to more than 300 automotive repair businesses in the Golden Horseshoe area through its economic opportunity workshops, newsletters and information packages. Members were shown how they could go beyond regulatory compliance to achieve economic, as well as environmental, gains. In recognition of its work, HARA was the winner of the 1994 P⁴ Leadership Award (see page 30).

1995

In March, HARA and MOEE signed a partnership agreement to develop and disseminate information on environmentally sound business procedures and other good operating practices. With the assistance of MOEE, the association undertook to deliver three products: a workshop, a workbook for autobody repair shops, and a video for the autobody repair businesses.

Autobody profitability workshops were held in Toronto and Hamilton and a workbook for autobody repair shops was distributed to participants.

Kelly Auto Body, a HARA member, was presented with the 1995 P⁴ award for small facilities (see page 30)

for more information ...

- ◆ Guide for Autobody Shops (draft, September, 1995)

For copies or other information on the Hamilton District Autobody Repair Association (HARA) Partnership, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).



Industrial laundries partnership

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), the Metropolitan Toronto Works Department, the City of Brantford and six participating companies in the commercial industrial laundry sector.

The goal of the partnership is to reduce the use, generation and/or release of toxic substances — with particular attention to solvents, heavy metals and oil and grease — through source controls and best management practices.

the story so far ...

1993

A survey of the Ontario industrial and commercial laundry sector was conducted and a status report and recommendations were prepared by the Industrial Laundries' Task Force.

1994

In March, a workshop on pollution prevention practices and clean technologies attracted industry, municipal and chemical supplier representatives. The task force developed and distributed a manual identifying pollution prevention environmental management practices, a customer brochure on wiping towel handling practices and information on treatment technologies targeted at laundry operators.

MOEE and Metropolitan Toronto sampled selected laundry wastewater treatment processes (the data were provided to the technical committee developing limits for Ontario's new model sewer use bylaw).

1995

The task force drafted best management practices to implement site-specific management systems and to identify opportunities for reducing waste and preventing discharges to the environment. These would form part of the forthcoming Environmental Code of Practice for Laundry Operations.

A training session on environmental management was provided to institutional laundry managers from across Canada as part of their accreditation by the Canadian Laundry and Linen Institute.

1996

In July, the Environmental Code of Practice for Laundry Operations was published. In October, a workshop on environmental management for laundry operators attracted industry, municipal and chemical supplier representatives.

for more information ...

- ◆ Environmental Code of Practice for Laundry Operations (July, 1996)

For copies or other information on the industrial laundries partnership, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).

PARTICIPATING COMPANIES ...

G&K Work Wear Ltd. of Canada

Canadian Linen Supply Co. Ltd

Cadet Uniform Services

Topper Linen Supply Ltd.

Langley Parisian Limited

Model Uniform Rental Division of
Oshawa Holdings Ltd.

Photo processing mini-labs partnership

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE) and the Photo Marketing Association (PMA) International, which represents the interests of photo processors, suppliers and photochemical manufacturing.

The goal of the partnership is to minimize water consumption and reduce the amount of silver - a contaminant - and photo chemicals discharged to the sewer system by one-hour mini-labs. Implementation of an Environmental Code of Management Practice for Mini-labs — incorporating employee training, spill control, preventative maintenance and pollution prevention principles — reduces silver discharges by an estimated 99 per cent.

the story so far ...

1991

The MOEE and the Region of Peel surveyed and analysed the wastes generated by 15 mini-labs and three larger photo labs. The levels of biological oxygen demand, nitrogen, sulphate, phosphorus, iron and silver all exceeded sewer-use bylaw limits, due to poor operational practices and insufficient, or improper use of treatment equipment.

1992

The Photo Marketing Association International, which represents more than 2,500 photo processors in Canada, funded the development of draft best management practices (BMP) for mini-labs at MOEE's request. A consultant was hired in the fall to develop the draft BMPs, working with MOEE.

1993

The PMA's environmental affairs committee and the ministry agreed to the final draft BMP for mini-labs.

1994

The PMA and MOEE proceeded with a voluntary industry initiative to encourage mini-labs to reduce silver discharges, prevent spills and conserve water, prior to any regulatory BMP.

In November, the PMA published an Environmental Code of Management Practice for Mini-labs. The code presents three waste treatment options: (1) onsite treatment of silver, (2) off-site treatment of silver, (3) the complete off-site waste management of all chemicals. It also addresses employee training, preventative maintenance, proper chemical storage, spill prevention and control and internal audits.

the progress to date ...

Since 1994, the chemical and equipment suppliers of the PMA have provided technical support and training courses for mini-labs operators. To date, approximately 600 mini-lab operators have been trained. As well, 31 companies have registered in the ministry's P⁴ program. These companies have reduced silver cumulatively by 99 per cent and photo chemicals cumulatively by 93 per cent.



for more information ...

- ◆ Environmental Code of Management Practice for Mini-labs, November 1994.

For copies or other information on the photo processing mini-labs partnership, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers)

Restaurant sector partnership

A co-operative effort by the Ontario Ministry of Environment and Energy (MOEE), the Metropolitan Toronto Works Department and invited municipalities, the Ontario Restaurant Association and its participating members.

The goal of the partnership is to develop and implement improved operating and management practices that would reduce discharges of oil, grease and fat from restaurants to municipal sewers.

the story so far ...

1993

A presentation was made to representatives of the restaurant sector in order to identify the need for and requirements of the program, produce a work plan and request voluntary participation.

1994

In May, representatives from six major fast food chains, the MOEE, and six municipal works departments formed the Restaurant Sector Working Group.

Participating fast food chains made selected facilities available for detailed assessments of waste management practices and waste pretreatment systems. The working group used the information collected to develop an environmental code of management practices, which focused on operating practices, equipment and training.

A draft report was prepared on discharges of fat, oil and grease and their effect on municipal wastewater collection and treatment systems. A workshop was held on bio-augmentation — that is, the use of biochemicals to break down organic wastes. A second workshop covered grease trap requirements and the effect of uncontrolled discharges on trap efficiency.

1995

In May, a draft Restaurant Sector Environmental Code of Practices was released for review by participating facilities and municipalities.

1996

A draft report assessed the application of bio-augmentation in the restaurant sector, including the effect on grease trap performance and sewer maintenance.

The steering committee developed an environmental education package for province-wide distribution to all food preparation facilities and circulated the package in Metropolitan Toronto and to major municipalities throughout Ontario.

for more information ...

For copies of the environmental information package or other information on the restaurant sector partnership, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).

PARTICIPATING COMPANIES ...

McDonald's Restaurants

Cara Operations Limited

Scott's Food Services Inc.

Obies Restaurants

General Mills Canada Inc.

Ontario Chinese Restaurant and Food
Service Association



Pollution Prevention Pledge Program

(P⁴)

The Pollution Prevention Pledge Program (P⁴) of the Ontario Ministry of Environment and Energy (MOEE) acknowledges the environmental achievements of industrial, commercial, institutional, community and government enterprises. The program is designed to encourage the voluntary adoption of pollution prevention and pollution prevention planning throughout the province.

Recognition is given to facilities that have achieved reductions (or have planned reductions) in: the release of chemicals to the environment, the use of toxic chemicals, and/or the generation or disposal of hazardous and liquid industrial wastes.

Companies and other organizations can participate in the Pollution Prevention Pledge Program at one of four progressive levels, according to their progress in implementing a pollution prevention strategy:

P¹

the registration and planning level — for facilities intending to make a commitment to reduce or eliminate pollution.

P²

the reduction commitment pledge level — for facilities which are ready to make a targeted, public commitment to reduce pollution.

P³

the reduction achievement level — for facilities that have achieved a considerable reduction in pollution or have made significant progress towards their goals.

P⁴

the pollution prevention achievement level — for facilities that have achieved considerable reductions or made significant progress towards their goals and are using accepted pollution prevention techniques in their production processes.

As of December, 1996, a total of 195 sites have enrolled at different levels, from P¹ to P⁴, in the program (see Appendix 1 for a list of participating companies). Of these, 75 sites were registered at the P¹ level and 120 beyond the P¹ level. Total reductions achieved and reported through this program (by companies enrolled at the P³ and P⁴ levels only) account for 30,000 tonnes per year. These are summarized in the accompanying tables.

The ministry has two ways of recognizing companies that are committed to pollution prevention. It gives out certificates and decals and it holds an annual awards program for outstanding participants.

Each facility or company enrolled at the P², P³, or P⁴ level receives a certificate, signed by the Minister of Environment and Energy, acknowledging its level of participation in the program. Participants that have reached the P⁴ level also receive a decal,



bearing Ontario's pollution prevention symbol, which they can display on the company premises and stationery.

For outstanding participants, the MOEE hosts the prestigious annual Pollution Prevention Pledge Awards. These awards are presented in two categories: The Pollution Prevention Achievement Award (for small, medium and large facilities) and the Pollution Prevention Leadership Award.

for more information ...

- ◆ Pollution Prevention Pledge Program, Program Overview (PIBS #2691b)
- ◆ Guide to Awards (PIBS #2693b)
- ◆ Pollution Prevention Pledge Program, Guide to Application (PIBS #2692b)

For copies or other information on the Pollution Prevention Pledge Program (P⁴), contact the Pollution Prevention Office of MOEE (See Appendix 2).

meet the P⁴ award winners ...

1993

Small Facility Achievement Award

Ontario Store Fixtures (Concord), a manufacturer of custom wood and metal fixtures, reduced solvent use by 65 per cent, paint sludges by 85 per cent, VOCs by 120,000 kilograms a year, lowered energy consumption and reduced the amount of solid waste going to landfill.

1993

Leadership Award

Pollution Probe (Toronto), an environmental public interest group, has advocated pollution prevention concepts for well over 10 years and aggressively incorporated this position into many of its activities.

1994

Large Facility Achievement Award

Xerox Canada (Toronto) eliminated the use of 140 kilograms of methylene chloride and replaced its ozone-depleting substances with more environmentally friendly products. In addition, the company began the in-house recycling of waste solder, collected from the cleaning/resoldering of circuit boards.

1994

Medium Facility Achievement Awards

Elf Atochem Canada Inc. (Oakville) manufactures and markets chemical and lubricant products. The company ensured that its employees were trained to effectively recycle materials, conserve water and energy, and minimize the environmental effects of chemical spills and emissions.



Strataflex Canada Corporation (East York), a manufacturer of flexible circuit boards used in the computer, aerospace, telecommunications and defence industries, committed itself to a zero haul-away policy and to the treatment of all wastes in-house by the end of 1994.

1994

Small Facility Achievement Award

Daylin Cleaners (Etobicoke) used a water-based Clean and Green System to eliminate the use of approximately 8,500 litres of perchloroethylene a year. In addition, the company was able to cut the use of Stoddard solvent used in dry cleaning by 50 per cent and dyes by 10 per cent, the generation of hazardous wastes by 50 per cent, other pollutants by 20 per cent and energy consumption by 30 per cent.

1994

Leadership Achievement Award

The Hamilton District Autobody Repair Association (HARA) reached more than 300 automotive repair businesses in the Golden Horseshoe through workshops, newsletters and information packages. It kept its members informed about legislation pertaining to autobody shops and showed them how to increase profits while reducing emissions of solvents and volatile organic compounds to the environment.

1995

Large Facility Achievement Award

Lennox Industries (Canada) Ltd. (Etobicoke) eliminated the use of adhesives containing 1,1,1-trichloroethane and achieved a 50 per cent reduction in the use of 17 aerosol solvents, lubricants and spray paints.

1995

Medium Facility Achievement Awards

Careful Hand Laundry & Dry Cleaners Ltd. (Toronto) achieved a 42 per cent reduction in the use of perchloroethylene. And the Guelph Utility Pole Co. Ltd. (Guelph) reduced waste pentachlorophenol by 99 per cent.

1995

Small Facility Achievement Award

Kelly Auto Body (1989) Ltd. (Hamilton) achieved an 80 per cent reduction in washing solvent wastes.

1995

Leadership Award

The Motor Vehicle Manufacturers' Association (MVMA) entered into the first industry/federal/provincial pollution prevention agreement in Canada. At the time of the awards ceremony, it had reported a reduction of 3,960 tonnes of toxic substances and other wastes, accomplished through 42 pollution prevention projects at 13 participating facilities.



1996

Large Facility Achievement Award

Du Pont Canada Inc. (Maitland) reduced fibre wastes, discharges and emissions of adipic and nitric acid, carbon tetrachloride, tetrachloroethylene, cyclohexane, naphthalene, hexamethyleneimine, bis(hexamethylene)triamine, alumina, carbon dioxide and nitrous oxides.

1996

Medium Facility Achievement Award

Huntsman Corporation Canada Inc. (Guelph) reduced ethylene oxide emissions by 99 per cent.

1996

Small Facility Achievement Award

Finchdale Cleaners (Weston) converted a major part of its business to a wet cleaning process and, as a result, reduced the generation of hazardous wastes, including perchloroethylene, by 75 per cent during the last two years.

1996

Leadership Award

The Canadian Division of the Photo Marketing Association (PMA) International developed, implemented and promoted a voluntary environmental code of management practice which led to reductions in discharges of silver and other chemicals into the environment. PMA worked with suppliers and photo processing mini-lab operators to establish training courses on the code, and promoted use of the code elsewhere in North America.

Reported or planned reductions under the Pollution Prevention Pledge Program (tonnes/year)

<i>Year</i>	<i>P² Planned</i>	<i>P³ Achieved</i>	<i>P⁴ Achieved</i>	<i>Total</i>
1990	—	—	63	63
1991	—	450	1,058	1,508
1992	—	1,829	5,805	7,634
1993	—	41	9,880	9,921
1994	—	12,295	7,368	9,663
1995	—	150	668	818
1996	40,498	—	1	40,499
1997	14,645	—	—	14,645
2000	23	—	—	23
Total	55,166	14,765	24,843	84,774



**Achieved reductions (P² & P¹)
by waste type under the
Pollution Prevention Pledge Program**

<i>Waste type</i>	<i>Tonnes per year</i>
Acid waste, other metals	702
Aliphatic solvents	462
Alkaline phosphates	2,520
Alkaline wastes, heavy metals	22
Alkaline wastes, other metals	427
Aromatic solvents	1,066
Brines, chlor-alkali wastes	7
Emulsified oils	1
Halogenated pesticides	63
Halogenated solvents	291
Light fuels	591
Neutralized wastes, heavy metals	16
Nonhazardous waste	1,701
Oil skimmings and sludges	6,808
Organic acids	503
Other specified inorganics	233
Other specified organics	5,726
Paint/pigment/coating residues	1,219
Pathological wastes	593
Petroleum distillates	1
Phenolic wastes	1
Photoprocessing wastes	17
Polymeric resins	7
Unspecified waste class	1,461
Volatile organic compounds	5,179
Waste oils and lubricants	377
Total	29,994



Education, training and tools

Education and training

While pollution prevention and environmental management systems offer clear and quantifiable benefits, they are still relatively new concepts to many clients. Education and training are necessary to develop the requisite knowledge and skills for those authorized to plan and implement pollution prevention initiatives.

Four levels or categories of education and training may be used: (1) awareness training, (2) practical tools training, (3) hands-on, how-to training, (4) train-the-trainer training. Each of these are described briefly.

Awareness training sessions are used to promote the principles and underlying theories of pollution prevention. At this first stage, benefits such as cost avoidance, improved environmental performance and due diligence are emphasized.

The practical tools sessions provide a more comprehensive discussion of the concepts that can be used to achieve pollution prevention goals. Participants learn how to assess and deal with their organization's environmental priorities using essential tools such as pollution prevention planning and problem solving methods. Sector-specific instructional tools, such as guidebooks and codes of practice, are developed and used to make the adoption of pollution prevention easier.

Hands-on, how-to workshops go beyond the concepts stage and provide sufficient in-depth training to allow the participants to implement pollution prevention/environmental management planning in their own workplaces. These workshops may entail a tour of a facility which has pollution prevention projects in place. After a walkthrough of the plant, the participants may follow up with questions about project implementation, including specific challenges and costs.

Train-the-trainer sessions are designed to train individuals who will return to their facilities and provide awareness, practical tools and hands-on workshops for their colleagues. These train-the-trainer sessions are tailored for individuals who already have received instruction in the concepts, theory, and application of pollution prevention.

MOEE participates in the development and/or delivery of numerous such programs. Educational and training activities are routinely provided to six different client groups:

- ◆ business and industry partners
- ◆ municipal and community groups
- ◆ educational institutions
- ◆ conferences and workshops
- ◆ international forums
- ◆ internal ministry staff.

Illustrative examples of educational and training workshops for each client group follow.



Business and industry partners

A North American Auto Supplier Environmental Workshop was held in October, 1995. More than 300 participants from the U.S. and Canada attended presentations on environmental management systems (based on ISO 14000), clean production, alternative regulatory approaches and design for the environment.

A Pollution Prevention Awareness Workshop for Printers, held in June, 1995, involved 180 participants from the printing industry.

A series of environmental management system workshops (ISO 14000), for more than 30 representatives from auto parts companies, was held in 1995 and 1996.

A three-part, hands-on, how-to training course on implementing the Metal Finishing Pollution Prevention Guide was conducted in May, 1996, by Sheridan College for 18 sector representatives.

Municipal and community groups

Presentations to promote opportunities for pollution prevention in the Great Lakes' Areas of Concern were made to Remedial Action Plan (RAP) committees in Hamilton, Bay of Quinte, and Collingwood, in 1994, and to the RAP co-ordinators workshops in March, 1995 and January, 1996.

The Windsor Air Quality Committee held a Windsor Pollution Prevention '95 Seminar in March, 1995, to promote pollution prevention with local industry.

The London Chamber of Commerce hosted a special session on pollution prevention in February, 1996.

The Regional Municipality of Hamilton-Wentworth held a pollution prevention workshop to share its successes and experiences with other municipal governments in February, 1996.

Educational institutions

The Ontario Environmental Training Consortium in Niagara Falls invited MOEE to describe some of the opportunities associated with pollution prevention at a conference for college teachers in May, 1995.

Loyalist College in Belleville arranged for a lecture on pollution prevention for engineering technologists in February, 1996.

The University of Toronto arranged for government and industry experts to give lectures on pollution prevention and environmental management systems to graduate students in 1995-96 and 1996-97.

Conferences and workshops

The Canadian Environmental Technologies (CETECH) Conference, held October 18-20, 1994, featured case study presentations on pollution prevention techniques and training for shop floor staff in manufacturing plants.

The Environment and Energy Conference of Ontario (EECO), in November, 1994, featured pollution prevention sessions on the Pollution Prevention Pledge Program, environmental management systems and green chemicals. The 1995 conference included all-day sessions on ISO 14000 and regulatory reform.

MOEE sponsored an industrial ecology workshop on February 10, 1994, for consultants, academics, and representatives from industry, various service sectors and government.



The Conference Board of Canada held voluntary initiatives workshops in Toronto and Burlington in February, 1996. These featured presentations on the Emery Creek and Hamilton-Wentworth pollution prevention projects.

International forums

The World Wildlife Fund organized a one-day Roundtable on Pollution Prevention for Indirect Dischargers, with representatives from environmental groups, Quebec, the U.S. and MOEE in May, 1995.

The annual environmental conference, put on by the American Electroplaters and Surface Finishers Society and the U.S. Environmental Protection Agency in February, 1996, featured a presentation and training course on how to use the metal finishing pollution prevention guidance manual.

The biannual meeting of the Great Lakes Pollution Prevention Roundtable, held in Sarnia during August, 1995, featured updates on the pollution prevention activities of the U.S. and Canadian federal governments, and included a special section on Ontario's efforts.

The Canadian Environment Industry Association (CEIA) organized the 17th annual Canadian Waste Management Conference held in Quebec City in September, 1995. More than 300 representatives from all 10 provinces and several countries discussed new solutions for waste minimization, including voluntary industry/government pollution prevention partnerships.

Internal ministry staff

A mining course for 45 environmental officers, which was held in Timmins in June, 1995, featured a presentation on MOEE's pollution prevention strategy and programs.

In November, 1995, the Canadian Standards Association conducted a two-day awareness raising, interactive training session for 25 MOEE front line and management staff on ISO 14000 as it applies to small and medium-sized businesses.

A series of half-day pollution prevention workshops was delivered to more than 95 regional staff from seven MOEE offices in 1995-96.

A two-day Green Industry Training Course, held in February, 1996, featured sessions on environmental management systems, ISO 14000 and pollution prevention.



Tools

Pollution prevention guidebooks, environmental management systems, case studies, videos and codes of management practice all can be used to aid client groups. Many of these tools have been developed through pollution prevention partnerships and are targeted to the needs of a specific industrial or commercial sector. Others are generic and have more general application.

- ◆ **Pollution Prevention Planning - Guidance Document and Workbook** (March, 1993, and revised March, 1995) — *a general pollution prevention planning guide for business*
- ◆ **A Strategy to Fulfill the CCME Commitment to Pollution Prevention** (May, 1996) — *offers vision, mission, goal and common definition for governments across the country*
- ◆ **Environmental Code of Management Practice for Mini-labs** (November, 1994) — *provides a management system for photo processing mini-lab owners and operators to reduce waste and water consumption, minimize silver discharges to sewers and prevent spills and poor operating practices*
- ◆ **Metal Finishing Pollution Prevention Guide** (April, 1995) — *a hands-on, how-to pollution prevention guide for metal finishers*
- ◆ **Environmental Code of Management Practice for Laundry Operations** (July, 1996) — *a management system for laundry operations to identify opportunities to reduce waste and prevent discharges to environment*
- ◆ **The Eco-Efficiency Resource Manual** (January, 1996) — *a reference tool for economic development officers to stimulate economic development with business clients*
- ◆ **Pollution Prevention for the Printing and Graphics Sector** (November, 1994) — *a video used in printing and graphics trade shows to promote pollution prevention*
- ◆ **Rethink Pollution Prevention Pays** (1995) — *an introductory video to pollution prevention, used for general awareness-raising workshops*
- ◆ **Guide to Pollution Prevention for Municipalities** (published by the Regional Municipality of Hamilton-Wentworth, December, 1996) — *a pollution prevention guide which can be used by other municipalities and agencies*



MOEE leadership initiatives

Clean Marine partnership

In response to the boating industry's willingness to play a leadership role in protecting the environment, the Clean Marine Partnership was created in 1995 to develop an alternative to the regulatory approach. The partnership encourages environmental stewardship and pollution prevention in the recreational boating sector.

The partners include the Canadian Marine Manufacturers Association, Canadian Power and Sail Squadrons, Ontario Boating Forum, Ontario Marina Operators Association, Ontario Sailing Association, Ministry of Environment and Energy (MOEE), Environment Canada, Environmental Choice Program and Georgian College. In addition, there are seven companies and the Severn Sound RAP involved in the partnership.

The partnership has focussed on a public awareness and environmental education program. Its message of how each and every boater can help to protect the environment has been well received by the public. In two years, the partners have provided simple, easy-to-follow tips through pamphlets, guidebooks, television and videos, as well as voluntary inspection programs for almost one out of every 10 boaters in Ontario.

Since early 1995, the partnership members have been implementing a three-phase strategy to encourage pollution prevention and environmental stewardship:

- ◆ Clean marine products — promoting the manufacture, distribution and use of marine products that have been certified to be environmentally responsible;
- ◆ Clean marine practices — promoting pollution prevention practices at nearly one thousand marinas and yacht clubs through a soon-to-be-released voluntary Clean Marine Practices Handbook;
- ◆ Clean marine promotion — implementing an environmental education and public awareness campaign aimed at boaters, marinas and yacht clubs. A Memorandum of Understanding is being negotiated by all nine partners.

for more information ...

- ◆ Enviro-Boater Guide (1995)
- ◆ Enviro-Boater Video (1995)
- ◆ Clean Marine Practices Handbook

For copies or other information on the Clean Marine Partnership, contact the Program Development Branch of MOEE (see Appendix 2 for project officers).



Clean production activities

The Clean Production Activities program assists Ontario's industry in its resource conservation and pollution prevention efforts. Clean production activities have helped Ontario industry to:

- ◆ use energy and water more efficiently;
- ◆ reduce, reuse and recycle solid waste;
- ◆ reduce or eliminate liquid effluent and gaseous emissions;
- ◆ use raw materials more efficiently.

The goals for 1995-1996 were to have clients reduce water consumption by 30 per cent, energy by 10 per cent and source waste by 30 per cent. Preliminary results indicated these goals were attainable. In addition to improvements to the environment, the total annual savings to the companies in these resource areas have been in the millions of dollars.

During 1995-96, MOEE supported 92 clean production projects as follows:

- ◆ 24 green industrial analyses
- ◆ 29 green industrial retrofits
- ◆ 8 industrial energy service audits
- ◆ 12 feasibility studies
- ◆ 19 industrial retrofits.

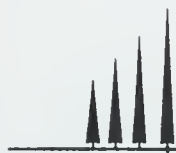
for more information ...

For information on the Clean Production Activities program, contact the Industry Conservation Branch of MOEE (see Appendix 2 for project officers).

Climate Change Voluntary Challenge and Registry program

Canada has made a commitment to stabilize greenhouse gas emissions at 1990 levels by the year 2000. In February, 1995, the Canadian Council of Ministers of the Environment agreed to adopt the Climate Change Voluntary Challenge and Registry (VCR) program as a key element of Canada's National Action Program on Climate Change. Natural Resources Canada is championing the program, with partnership from the provinces, business, industry and others. The program has three main objectives:

- (1) to engage the participation of industry and business, where 75 per cent of total greenhouse emissions originate;
- (2) to involve as much as possible the key sectors, which produce the greatest share of these industrial and business emissions;
- (3) to involve the largest companies within each key sector, as they can make significant and timely progress through their actions and can play a leadership role.



The VCR program to encourage companies and institutions to reduce voluntarily emissions of greenhouse gases has a series of stages: a letter of support, a letter of intent, a preliminary action plan, a comprehensive action plan and a progress report.

More than 500 submissions have been received by the VCR office, including more than 200 from Ontario-based companies. Recent efforts have focussed on broadening participation in the sectors where participation has been light, and stepping up participation (i.e. turning letters of support into comprehensive action plans).

Natural Resources Canada has signed Memorandums of Understanding (MOUs) and letters of co-operation with several major industrial and business associations, representing more than 70 per cent of Canada's greenhouse gas emissions from business and industrial sectors.

for more information ...

For information on the Climate Change Voluntary Challenge and Registry program, contact the Energy Conservation and Liaison Branch of MOEE (see Appendix 2 for project officers).

Eco-Efficiency Resource Manual

Eco-efficiency is an important and relatively new approach to business development. It focuses on delivering high quality products and services to the market on a competitive basis while, at the same time, reducing the amount of energy, materials and water required to do so.

The Economic Development Council of Ontario (EDCO), with assistance from other partners including Consumers Gas, the Great Lakes Pollution Prevention Centre (now known as the Canadian Centre for Pollution Prevention) and the Ministry of Environment and Energy, developed a supporting document entitled the Eco-Efficiency Resource Manual. Released in January, 1996, the manual is a key reference tool for Ontario's economic development officers, helping them further stimulate economic development by promoting eco-efficiency among their business clients.

In 1996, EDCO worked with its partners, including MOEE, to train municipal economic development officers through regional workshops.

for more information ...

For information on the Eco-Efficiency Resource Manual, contact the Pollution Prevention Office or the Industry Conservation Branch of MOEE (see Appendix 2 for project officers).



Environment and Energy Conference of Ontario

The annual Environment and Energy Conference of Ontario takes place in November at the Metropolitan Toronto Convention Centre. The mission of the conference is to promote opportunities for industry, interest groups and interested individuals to network, build business-to-business connections and learn of new approaches and technologies relating to resource conservation and pollution prevention.

More than 800 delegates, the majority from industry, attended the 1995 event. New government directions, regulatory reform, legal issues, business development and environmental management systems were highlighted in 44 sessions. As part of the conference, representatives from 65 Ontario and U.S. companies participated in the International Partnering Event on the Environment, which addressed both concerns and innovative solutions for problems in the Great Lakes basin.

In 1995, the three-day conference was presented in association with 12 partner organizations:

- Canadian Environment Industry Association - Ontario
- Canadian Manufacturers' Association
- Air and Waste Management Association - Ontario
- Ontario Hydro
- International Institute for Sustainable Development
- Solar Energy Society of Canada
- Water Environment Association of Ontario
- National Roundtable on the Environment and the Economy
- Canadian Consulate General - Buffalo, Chicago, Detroit
- Ontario International Trade Corporation
- Industry Canada
- Environment Canada

for more information ...

For information on the Environment and Energy Conference of Ontario, contact the Industry Conservation Branch of MOEE (see Appendix 2 for project officers).

External programs and policy liaison

The Ministry of Environment and Energy (MOEE) works with external organizations and governments to: promote consistent and co-ordinated approaches to pollution prevention among jurisdictions; and share information and lessons learned. Such activities have included:

- ◆ Promoting pollution prevention in partnership with the federal government through sectoral initiatives involving motor vehicle manufacturing, automotive parts manufacturing, metal finishing, chemical manufacturing, printing and graphics, hospitals, the municipality of Hamilton-Wentworth and industries in the Emery Creek watershed area.



- ◆ Working closely with the Great Lakes Pollution Prevention Centre on education and training initiatives and in the promotion of MOEE's P¹ program.
- ◆ Exchanging information and experiences with the U.S. Environmental Protection Agency (EPA), state officials and other experts who are involved with pollution prevention programs.
- ◆ Hosting delegations from Brazil, China, Hong Kong and other jurisdictions. Brazil has adopted the Pollution Prevention Planning Guidance Document and Workbook in its entirety. China also is considering translating and adopting the workbook.
- ◆ Chairing a Canadian Council of Ministers of the Environment (CCME) task group which developed the Strategy to fulfill the CCME commitment to Pollution Prevention (approved by the CCME in May 1996). This strategy outlines a vision, mission, goal and common definition for environment departments and society at large to pursue in improving environmental management. It also provides a series of options for governments to choose from in implementing a commitment to pollution prevention.
- ◆ Updating U.S. federal and state officials on Ontario's pollution prevention program at the August, 1995, Great Lakes Pollution Prevention Roundtable in Sarnia.
- ◆ Sharing information and experiences with government, industry, the public, and non-governmental organizations at international pollution prevention roundtables and workshops, including: the U.S. National Roundtable on Pollution Prevention, the Great Lakes Regional Pollution Prevention Roundtable, Canada's National Round Table on the Environment and the Economy and the International Joint Commission.
- ◆ Working closely with the Conference Board of Canada on the assessment and promotion of voluntary pollution prevention initiatives.
- ◆ Working with the Canadian Standards Association on environmental management systems policy and training.

for more information ...

For information on external programs and policy liaison, contact the Pollution Prevention Office of MOEE (see Appendix 2 for project officers).



Green Clean dry cleaner demonstration project

For three years, the Ontario Fabricare Association and the Korean Dry Cleaners Association have been working in partnership with Environment Canada and the Ontario Ministry of Environment and Energy (MOEE) to promote, support and help introduce the water-based Green Clean process. The objectives of the Memorandum of Understanding include promotion of the new process and reductions in solvent emissions.

The first Green Clean demonstration project opened on June 6, 1994, in Toronto. The final report of the project was issued in October, 1995, and listed 10 sites operated by seven different businesses in Ontario that offered Green Clean service. One of these sites is the first dedicated wet cleaning facility in Canada (i.e. clothes unsuitable for wet cleaning are dry cleaned off site). Participants in the project are currently wet cleaning from 40 to 70 per cent of clothes that would normally be dry cleaned and are striving to increase that percentage.

In June, 1996, a regulation for the training and certification of Ontario dry cleaners took effect. The training-related provisions of the regulation address ways to reduce the use of perchloroethylene or petroleum solvent and encourage Green Clean or other wet cleaning approaches, whenever possible. While such training is required under the regulation, the implementation of the complementary code of practice by individual cleaners is voluntary.

for more information ...

For information on the Green Clean dry cleaner demonstration project, contact the Program Development Branch of MOEE (see Appendix 2 for project officers).

Green Industry Strategy

The goals of the Green Industry Strategy are: to stimulate the growth of Ontario's green industry sector, creating new jobs and wealth; to enhance competitiveness of all industries by promoting green products and services; to promote environmental protection, pollution prevention and resource conservation.

Business Development Initiatives

The Ontario Centre for Environmental Technology Advancement (OCETA) was established by the Ontario and federal governments, in partnership with the private sector. OCETA's mandate is to assist small industries develop new environmental technologies to a commercial level. OCETA's 1995-96 operational report indicates it has worked with a total of 164 companies.

The Green Industry Office (MOEE) assisted approximately 900 companies in 1995 by reviewing business plans, advising on private and public financing sources, assisting with strategic procurement at public sector agencies and helping link suppliers to business opportunities.

Partnership with industry associations

The Ontario Chapter of the Canadian Environment Industry Association (CEIA) is an important private sector partner in implementing a number of Green Industry Strategy



activities. CEIA's membership increased in 1995 to 200 companies, which are involved in environmental protection, resource conservation, pollution prevention and recycling. Monthly Environmental Business Opportunities breakfasts are held to develop new clients. CEIA worked with the Green Industry Office in March, 1996, to deliver a two-day, Post-Globe'96 program for 200 foreign delegations interested in Ontario's environment industry capabilities.

Green Industry information sources

The 1996 edition of the Directory of Ontario Green Industries was released and provides an overview of about 2,000 companies that constitute Ontario's environmental industry. Available in hard copy or on disk, the directory is a tool that can be used to assist Ontario's environment sector in developing partnerships, consortia, licence agreements, foreign contracts and information transfers. More than 1,300 copies were distributed to foreign and local visitors at the Globe'96 trade show.

for more information ...

For information on the Green Industry Strategy, contact the Green Industry Office of MOEE (see Appendix 2 for project officers).

Hamilton-Wentworth Air Quality Initiative (HAQI)

This initiative evolved from the Windsor Air Quality Study and is a co-operative effort of the Ministry of Environment and Energy (MOEE), the Regional Municipality of Hamilton-Wentworth, Environment Canada, academia, interest groups and the residents of Hamilton-Wentworth.

The primary objective of this initiative is to apply science and technology to understand better the environmental, ecological and health effects of airborne pollutants within the Hamilton-Wentworth boundary, with the ultimate aim of remedial actions. Some of the features of this community-based study include:

- ◆ multi-agency co-operation (involving government, academia, non-governmental organizations, industry, etc.);
- ◆ integrated assessment of both ecological and human health effects;
- ◆ focused, in-house resource utilization which has kept costs low;
- ◆ demonstrated MOEE and inter-governmental leadership in and commitment to environmental pollution prevention;
- ◆ new applied science and technologies, which may be transferable to other environmental issues in other communities.

for more information ...

For information on the Hamilton-Wentworth Air Quality Initiative (HAQI), contact the West Central Region Office of MOEE (see Appendix 2 for project officers).



Industrial Waste Diversion Program (IWDP)

The Industrial Waste Diversion Program assists the industrial, commercial and institutional sectors with the diversion of wastes from disposal. Since its inception in 1987, the IWDP has funded more than 500 projects, providing grants totalling more than \$35,000,000. These projects diverted from disposal more than 80,000 tonnes of hazardous waste, 35 million litres of liquid industrial waste and 1.8 million tonnes of non-hazardous waste. The IWDP is currently not accepting new applications.

for more information ...

For information on the Industrial Waste Diversion Program, contact the Waste Reduction Branch of MOEE (see Appendix 2 for project officers).

Lake Superior Bi-National program

Created under a Memorandum of Understanding between the Ontario Ministry of Environment and Energy (MOEE) and Environment Canada, the program is designed to promote pollution prevention and develop demonstration projects in the Lake Superior basin.

Partnerships to implement pollution prevention strategies, with their focus on water and energy conservation and reductions in mercury discharges, have been developed between industrial and municipal partners, including the City of Thunder Bay and Ontario Hydro. A two-year demonstration Merc-Divert program is aimed at the collection and recycling of button batteries containing mercury. The initiative also includes a series of workshops with dentists, hospitals, the printing and graphics industry, North Shore municipalities and small businesses.

for more information ...

For information on the Lake Superior Bi-National program, contact the Northern Region Office of MOEE (see Appendix 2 for project officers).

Mercury Elimination and Reduction Challenge (MERC)

Pollution Probe, the Ministry of Environment and Energy (MOEE), and Environment Canada have developed a demonstration partnership to reduce the use and release of mercury, under the Canada-Ontario Accord.

In March, 1995, Pollution Probe completed an inventory on the use, generation and release of mercury in Ontario, which MOEE and Environment Canada have adopted.

A Mercury Pollution Prevention Workshop, attended by a range of stakeholders, including users and recyclers of mercury or mercury-containing products, was held in Toronto in June, 1995. In the fall of 1995, Pollution Probe made a series of presentations to Greater Toronto Area hospitals, highlighting the issue of mercury use in the health sector, and seeking partnerships with the health sector in a pilot reduction and elimination project.



In April 1996, Pollution Probe, the Health Care Environment Network, MOEE, Environment Canada, The Hospital for Sick Children, The Toronto Hospital and Centenary Health Centre signed a Memorandum of Understanding (MOU) for the Health Care Mercury Elimination and Reduction Challenge Project. Coinciding with the MOU signing, a workshop for health care workers and stakeholders was held at Metro Hall. Presentations covered alternatives to mercury and innovative approaches to managing and eliminating mercury use in the health care sector.

Ongoing activities, co-ordinated through the MOU steering committee, include an inventory of mercury-containing products in member hospitals and the development of a listing of replacement items and/or procedures. Dialogue with other area hospitals continues with the aim of expanding the number of members on the steering committee and providing support for other hospitals in reducing their use and/or release of mercury in the health care system.

for more information ...

For information on the Mercury Elimination and Reduction Challenge, contact the Program Development Branch of MOEE (see Appendix 2 for project officers).

Operations Division

In 1995, a pollution prevention training and education program was developed for Operations Division field staff by the Pollution Prevention Office, in conjunction with the Assistant Director's office of West Central Region. The workshops were delivered in seven regional or district offices with more than 95 Operations staff trained to date. The workshops provided an overview of pollution prevention activities, the activities of participating industrial, commercial, institutional and municipal sectors in the regions and the role of Operations staff.

Staff of the Operations Division are encouraging industry and municipalities to use pollution prevention as one of their tools in abating pollution problems and achieving compliance. Operations Division staff are actively participating in pollution prevention partnerships, such as the MOU for the Regional Municipality of Hamilton-Wentworth and the Canadian Chemical Producers' Association.

In addition, the Operations Division has been involved in reviewing the use of environmental management systems, particularly ISO 14000, and their applicability as tools for the MOEE. A guidance manual is being developed for use by Operations Division staff. The manual will incorporate ISO 14000 as part of the pollution prevention training workshops. The Canadian Standards Association worked with the ministry to develop a pilot workshop on ISO 14000 for MOEE staff in November, 1995.

for more information ...

For information on Operations Division initiatives, contact the Pollution Prevention Office or the West Central Region Office of MOEE (see Appendix 2 for project officers).



Remedial Action Plan (RAP) program

The Remedial Action Plan Program is founded on the ecosystem approach and concerned with the zero discharge of persistent toxic substances, leading to their virtual elimination in the Great Lakes' Areas of Concern (AOC). Many of the recommended actions contained in the plans focus on source control and pollution prevention in order to sustain the environment. RAP co-ordinators and their clients are working:

- ◆ to promote the concepts, principles and application of pollution prevention;
- ◆ to advertise the ministry's Pollution Prevention Pledge Program (P⁴);
- ◆ to share information and results.

The goal is to persuade the RAPs to broaden their efforts to include multi-media pollution prevention with municipal and industrial sectors in their AOCs. To date, discussions have been held with Collingwood, Bay of Quinte and Hamilton Harbour RAPs.

Several of the Areas of Concern are members of the Green Communities Network, which evolved from the former MOEE Green Communities Initiative Program. Within this network, thousands of households and hundreds of commercial facilities and several municipalities are being audited on their environmental practices. Retrofits may entail energy and water conservation and efficiency improvements, reduction in or elimination of the use of pesticides and toxic cleaners, hazardous and solid waste reduction and naturalization of private and public landscapes. Municipal procurement practices, structure maintenance, parkland management and bylaw language are being reviewed to reflect pollution prevention principles and sustainability.

for more information ...

For information on the Remedial Action Plan program, contact the Program Development Branch of MOEE (see Appendix 2 for project officers).

Resource conservation sector protocols

Sector protocols or procedures and guides that focus on generic processes are useful tools to help industry clients identify potential resource conservation and process improvements within their facilities. The guides are intended to build on the existing skills and knowledge among clients who have an interest in preventing pollution and (potentially) reducing production costs. In some cases, the development and use of sector guides has become the basis for ongoing co-operation among the MOEE, industry associations and specific industrial client groups.

To date, MOEE and its private sector partners have completed guides for three sectors: dairy processing, meat and poultry and adhesives, paints and coatings. Preparation of sector guides is underway for auto parts manufacturers, food services, plastics processing, plastics reprocessing, soaps and detergents, water and wastewater treatments and commercial buildings. MOEE is also working with the sectors to make the maximum use of opportunities identified in the guides.

for more information ...

For information on the Resource Conservation Sector Protocols, contact the Industry Conservation Branch of MOEE (see Appendix 2 for project officers).



Scrap tire activities

Both industry and municipalities have worked with MOEE to divert scrap tires from disposal through: the research and development of new technologies; the development of value-added products made from materials derived from tires; demonstration projects for new technologies and products; research on asphalt paving which incorporates rubber.

MOEE funded 59 tire recycling projects under the program which was completed in March, 1996. Of an estimated 10 million scrap tires generated annually in Ontario, 53 per cent are currently being diverted from disposal. The balance are exported, primarily for use as tire-derived fuel.

for more information ...

For information on scrap tire activities, contact the Waste Reduction Branch of MOEE (see Appendix 2 for project officers).

Smog plan

The initiative Towards a Smog Plan for Ontario calls on individuals, businesses, organizations and governments to develop and implement actions to reduce emissions of contaminants that contribute to the smog problem in Ontario. Although many who are interested or affected are already achieving reductions, Ontario's smog plan will co-ordinate these efforts and focus activities towards achieving established goals.

In February, 1996, the Ministry of Environment and Energy formed a smog team to: assess the smog issue, prepare a discussion paper and supporting technical documents and to plan a June stakeholder workshop. The discussion paper, which proposes 20-year smog reduction targets, was released at the June workshop and launched a collaborative action planning process. An executive, steering committees and working groups were formed to prepare sectoral action plans.

for more information ...

- ◆ Towards a Smog Plan for Ontario — A Discussion Paper (June, 1996)
- ◆ Supporting Document for Towards a Smog Plan for Ontario (June, 1996)

For copies or other information on the smog plan, contact the Science and Technology Branch of MOEE (see Appendix 2 for project officers).



Technology development partnerships

These partnerships with the private sector are being used to develop and/or introduce leading-edge technologies that can prevent pollution, help clean the environment and achieve substantial reductions in emissions, waste and energy use. Newly developed products and technologies provide excellent export opportunities and are helping to create permanent, highly skilled jobs in Ontario. During 1995-96, there were 56 active technology development and pollution prevention demonstrations supported by the MOEE:

- ◆ 23 environmental technology demonstrations;
- ◆ 20 energy technology development projects;
- ◆ eight energy-efficient industrial process equipment demonstrations;
- ◆ five market entries of Ontario-supplied energy efficiency technology demonstrations.

Status reports on innovative environmental technologies in targeted industries assist companies to exceed current compliance levels, while increasing their competitiveness. The status reports completed to date include Low-NO_x, High-Efficiency Combustion Technologies and Electric Vehicles: Technology Development for a Cleaner Environment.

for more information ...

For copies of status reports or other information on technology development partnerships, contact the Industry Conservation Branch of MOEE (see Appendix 2 for project officers).

Vehicle inspection and maintenance pilot project

The voluntary vehicle inspection and maintenance pilot project was led by the Ministry of Transportation and the Ministry of Environment and Energy from April, 1995 to October, 1996. The project tested in-use light duty vehicle emissions (for nitrogen oxides, hydrocarbons, carbon monoxide) at the CleanAir Centre and spot checked heavy duty vehicle emissions (opacity) against accepted standards for those vehicles. Results of the pilot project are currently being evaluated.

Owners of light duty vehicles which failed the test were provided with a list of suggested repairs that would reduce emissions and invited back for retesting.

for more information ...

For information on the vehicle inspection and maintenance pilot project, contact the Program Development Branch of MOEE (see Appendix 2 for project officers).



Windsor Air Quality Pollution Prevention project

Starting in 1991, the Windsor Air Quality Committee, a local group made up of business, industry, environmental groups, governments and individuals, in partnership with MOEE, conducted a three-year intensive air toxics study in the Windsor area. The main objective of this study was to assess the human health risk posed by airborne toxics, with the ultimate aim of reducing this risk. Following completion of the scientific investigations in 1994, a call for community action was issued.

Five action groups dedicated to pollution prevention and remediation have been formed to address: international pollution, the regulation of polluters, voluntary action by industry, transportation and public education. In November, 1994, seven scientific/technical reports and two summaries were released. These concluded that the health risk from airborne toxic compounds for residents of Windsor is very similar to that of other major North American cities.

for more information ...

For information on the Windsor Air Quality Pollution Prevention project, contact the Southwestern Region Office of MOEE (see Appendix 2 for project officers).



Appendix 1

List of sites registered with the Pollution Prevention Pledge Program (P⁴)

P¹

the registration and planning level — for facilities intending to make a commitment to reduce or eliminate pollution.

P²

the reduction commitment pledge level — for facilities which are ready to make a targeted, public commitment to reduce pollution.

P³

the reduction achievement level — for facilities that have achieved a considerable reduction in pollution or have made significant progress towards their goals.

P⁴

the pollution prevention achievement level — for facilities that have achieved considerable reductions or made significant progress towards their goals and are using accepted pollution prevention techniques in their production processes.

Some sites may have more than one project registered at different levels of recognition (P¹, P², P³, or P⁴), hence more than one ♦ will appear per site.

Sites	City/Town	P ¹	P ²	P ³	P ⁴
3M Canada Inc. Brockville Plant	Brockville	♦			
3M Canada Inc. London Plant	London	♦			
3M Canada Inc. Perth Scotchbrite Plant	Perth				♦
A & A Metal Cleaning	Chatham				♦
Acadian Barrel Finishing Ltd.	Toronto				♦
Acadian Platers Co. Ltd.	Etobicoke				♦
Air Products Canada Ltd., Samia Hydrogen Liquefaction Facility	Samia				♦
Allwaste Tank Cleaning	Samia				♦
Alt Camera Exchange	Toronto			♦	
Apotex Inc. Production Department	Weston				♦
B & W Heat Treating (1975) Ltd.	Kitchener	♦			
BASF Canada Inc.	Windsor				♦
Bayer Rubber Inc.	Samia				♦
Brick Brewing Co. Ltd.	Waterloo	♦			
Buttons & Bows	Toronto				♦
Camera Kingston - Princess St.	Kingston				♦
Camera Kingston - Bath Road	Kingston				♦
Canadian Coast Guard - CCGS Griffon	Samia	♦			
Canadian Coast Guard - CCGS Samuel Risley	Samia	♦			
Canadian Coast Guard - CCGS Simcoe	Prescott	♦			
Canadian Coast Guard - Kenora	Kenora	♦			
Canadian Coast Guard - Parry Sound Base	Parry Sound	♦			
Canadian Coast Guard - Prescott Base	Prescott	♦			
Canadian Coast Guard - S.S. Marie Base	S.S. Marie	♦			
Canadian Coast Guard - Samia Base	Samia	♦			
Canadian Coast Guard - Thunder Bay Base	Thunder Bay	♦			
Canadian Coast Guard - Amherstburg Base	Amherstburg	♦			
Careful Fabricare Specialists	North York				♦
Careful Hand Laundry & Dry Cleaners	Toronto				♦
Cargill Limited	Samia	♦			
Carman's Foto Source	Ingersoll				♦
Carman's Foto Source - London (Richmond St.)	London			♦	
Carman's Foto Source - London (Wellington)	London		♦		
Carman's Foto Source	Port Dover			♦	
Carman's Foto Source	Simcoe			♦	
Carman's Foto Source	Strathroy				♦
Carman's Foto Source	Woodstock			♦	
Casco Inc.	Cardinal				♦
Cavalcade Colour Lab	Bracebridge			♦	
Cavalcade Colour Lab	Hunsville				♦
Cavalcade Colour Lab	Orillia				♦
Chinook Group - Sombra Plant	Sombra			♦	
Choice Refer Systems- Belleville Site	Belleville	♦			

List of sites registered with the Pollution Prevention Pledge Program (P⁴)

Sites	City/Town	p1	p2	p3	p4
Ciba-Geigy Canada Limited	Mississauga	◆			
City of Waterloo	Waterloo	◆			
City of Windsor - Public Works Department	Windsor	◆			
Colonial Designs Manufacturing	Scarborough				◆
Corn Dev	Cambridge				◆
Container Services A.R.M	Colborne				◆
Credit Valley Hospital (The)	Mississauga				◆
Crown Cork & Seal Canada Inc Plant 244	Concord	◆			
Crown Cork & Seal Canada Inc Plant 245	Weston	◆			
Crown Cork & Seal Canada Inc Plant 252	Mississauga	◆			
Crown Cork & Seal Canada Inc Plant 257	Chatham	◆			
Crown Cork & Seal Canada Inc Plant 233	Concord	◆			
CSX Transprtation	Samia			◆	◆
Dandy 1 Hour Photo & Custom Framing	Etobicoke			◆	
Davlin Cleaners - Rexdale Site	Rexdale				◆
Dept. of National Defence -- CF Photographic Unit	Ottawa				◆
Domtar Packaging Red Rock Mill	Red Rock				◆
Dow Chemical Canada Samia Manufacturing Site	Samia				◆
Drew Chemical Limited	Ajax				◆
Dupont Canada Inc.	Ajax				◆
Dupont Canada Inc.	Maitland		◆	◆	◆
Dupont Canada Inc.	Kingston				◆
Elf Atochem Canada Inc.	Oakville				◆
Embury Company	Orillia				◆
Essex County Catholic School Board (L'Essor)	St. Clair Beach	◆			
Essex County Catholic School Board (Brebeuf)	Stoney Point	◆			
Essex County Catholic School Board (Cardinal Carter)	Leamington	◆			
Essex County Catholic School Board (Holy Name)	Essex	◆			
Essex County Catholic School Board (Pavillon des Jeunes)	Belle Riviere	◆			
Essex County Catholic School Board (Queen of Peace)	Leamington	◆			
Essex County Catholic School Board (Sacre-Coeur)	LaSalle	◆			
Essex County Catholic School Board (Sacred Heart)	LaSalle	◆			
Essex County Catholic School Board (Saint Jean Baptiste)	Amherstburg	◆			
Essex County Catholic School Board (Saint-Ambroise)	St. Joachim	◆			
Essex County Catholic School Board (Saint-Antoine.)	Tecumseh	◆			
Essex County Catholic School Board (Saint-Joseph)	Riviere-aux-canards	◆			
Essex County Catholic School Board (Saint-Michel)	Leamington	◆			
Essex County Catholic School Board (Saint-Paul)	Pointe-aux-Roches	◆			
Essex County Catholic School Board (Sainte-Ursule)	McGregor	◆			
Essex County Catholic School Board (St. Anne High School)	Tecumseh	◆			
Essex County Catholic School Board (St. Anthony)	Harrow	◆			
Essex County Catholic School Board (St. Bernard)	Amherstburg	◆			
Essex County Catholic School Board (St. Gregory)	St. Clair Beach	◆			
Essex County Catholic School Board (St. John De Brebeuf)	Kingsville	◆			



List of sites registered with the Pollution Prevention Pledge Program (P⁴)

<i>Sites</i>	<i>City/Town</i>	<i>p1</i>	<i>p2</i>	<i>p3</i>	<i>p4</i>
Essex County Catholic School Board (St. John the Baptist)	Belle River	♦			
Essex County Catholic School Board (St. John)	Woodley	♦			
Essex County Catholic School Board (St. Joseph)	River Canard	♦			
Essex County Catholic School Board (St. Louis)	Leamington	♦			
Essex County Catholic School Board (St. Mary)	Maidstone	♦			
Essex County Catholic School Board (St. Paul)	Windsor	♦			
Essex County Catholic School Board (St. Peter)	Tecumseh	♦			
Essex County Catholic School Board (St. Theresa)	Harrow	♦			
Essex County Catholic School Board (St. Thomas of Villanova)	Windsor	♦			
Essex County Catholic School Board (St. William)	Emeryville	♦			
Essex County Catholic School Board (St. Pius X)	Tecumseh	♦			
Essex County Catholic School Board (Ste. Marguerite D'Youville)	Tecumseh	♦			
Essex County Catholic School Board (Stella Maris)	Amerstburg	♦			
Essex Specialty Products Inc. Canada	London				♦
F Stop Cameras	Orangeville				♦
Feher Machine & Mfg. Inc.	Samia	♦			
Ferguson Graphics	Carleton Place	♦			
Finchdale Cleaners	Weston				♦
Fineline Circuits Limited	Scarborough				
Formulated Coatings	Bramalea				♦
GLIS (Corunna Cleaning Plant)	Corunna				♦
Guelph Utility Pole Co. Ltd.	Nichol Township				♦
H.L. Blatchford Limited	Mississauga		♦		
Hager Hinge Canada Ltd.	Kitchener				♦
Haines Frontier Printing Limited	Samia	♦			
Hamilton Civic Hospitals	Hamilton				♦
HO Imaging Limited	Mississauga			♦	
Hopper Foundry (1977) Limited (The)	Forest				♦
Huntsmen Corporation Canada Inc.	Guelph		♦		♦
Huron Web Offset Inc.	Wyoming			♦	
Imperial Oil, Finch Avenue Terminal	Downsview				♦
Imperial Oil, Products and Chemicals Division	Samia	♦			
Japan Camera Centre	Oakville				♦
Jayne's Photo Lab, Ltd.	Newmarket				♦
JM Schneider Inc.	Kitchener				♦
John Deere Welland Works	Welland				♦
Just Cameras Ltd.	Mississauga			♦	
Kelly Auto Body	Hamilton				♦
Kimberly Clark Forest Products Inc.	Terrace Bay		♦		♦
Komer Color Ltd.	Toronto				♦
L & M Fibreglass Inc.	Samia				♦
Lakeport Brewing Corporation	Hamilton	♦			
Lambton College	Samia			♦	

List of sites registered with the Pollution Prevention Pledge Program (P⁴)

Sites	City/Town	p1	p2	p3	p4
Lennox Drum Ltd.	Ajax				♦
Lennox Industries Canada Ltd.	Brampton				♦
Lennox Industries Canada Ltd.	Etobicoke			♦	♦
Lennox Industries Canada Ltd.	Gloucester				♦
Lennox Industries Canada Ltd.	Hamilton				♦
Lennox Industries Canada Ltd.	London				♦
Lennox Industries Canada Ltd.	Scarborough				♦
Lennox Industries Canada Ltd.	Waterloo				♦
Libbey Canada Inc.	Wallaceburg				♦
Lubrizol Canada Limited	Niagara Falls				♦
Menasco Aerospace Limited	Oakville				♦
Monroe Auto Equipment Co.	Owen Sound			♦	♦
Mount Royal Hardware & Photo	Burlington				♦
Mueller Canada	Milton				♦
My Valet Dry Cleaners	North Bay			♦	
Napanee Photo One	Napanee				♦
Navistar International Corp. Canada	Chatham			♦	♦
Noritsu Canada Limited	Mississauga				♦
North York Branson Hospital	North York				♦
Northern Telecom	Kingston			♦	♦
Novacor Chemicals (Canada) Ltd.	Samia				♦
Novacor Chemicals (Canada) Ltd.	Corunna				♦
Novacor Chemicals Ltd. Moore Plant	Moore Township		♦		♦
Novacor Chemicals Ltd. St. Clair River Site	Corunna				♦
One Hour Photo Express	Toronto		♦		
One Hour Moto Photo & Portrait Studios	Cambridge				♦
One Hour Photo More	Grand Bend				♦
Ontario Store Fixtures Inc. Wood Division Plant #2	Weston				♦
Ontario Hydro - Lambton Generating Station	Courtright	♦			
Our Cleaners	Barrie				♦
OxyChem Durez Canada	Fort Erie				♦
Partek Insulations Ltd.	Samia			♦	
PB Edmonson Ent.	Samia	♦			
Pembroke Civic Hospital	Pembroke				♦
Perfect Prints Image Center	Minden			♦	
Petro Canada - Lubricants Centre	Oakville				♦
Petro Canada - Keele Terminal	Downsview				♦
Petro Canada - Oakville Refinery	Oakville				♦
Prototype Circuits Inc.	Scarborough			♦	
RH & D Protective Coatings	Samia	♦			
Rhone-Poulenc Speciality Chemicals Ltd.	St. Catharines	♦			
Roctel Manufacturing	Guelph				♦
Samia General Hospital	Samia	♦			
SDS Photo Lab Ltd.	Toronto				♦

List of sites registered with the Pollution Prevention Pledge Program (P⁴)

<i>Sites</i>	<i>City/Town</i>	<i>p1</i>	<i>p2</i>	<i>p3</i>	<i>p4</i>
Shutterbug Photofinishing	Fenelon Falls			♦	
St. Joseph's Health Centre	Samia			♦	
Stelco Inc. - Narrow & Cold Rolled Products	Hamilton				♦
Strataflex Canada Corporation	Toronto				♦
Sulco Chemicals Limited	Elmira		♦		
Sun Polishing & Plating	Toronto				♦
Sunoco Inc. - Samia Refinery	Samia		♦		
Tech-Corona Operating Corp., David Bell Mine	Marathon				♦
Terra International (Canada) Inc.	Courtright	♦			
TME-Delta Incorporated	Samia	♦			
Town of Wallaceburg - Pollution Control Plant	Wallaceburg	♦			
Trel of Samia Limited	Samia	♦			
Tremco Limited	Toronto				♦
Tuberate Limited	Samia	♦			
Universal Drum Reconditioning	Mississauga	♦			
Universal Fasteners	Windsor	♦			
Velcro Canada Inc.	Brampton				♦
XEROX Canada Ltd., Canadian Manufacturing Operations	Mississauga				♦
XEROX Canada Ltd., National Supply & Logistics Centre	Mississauga				♦
Zehrs Markets (photo mini-lab)	Guelph			♦	
Zehrs Markets (photo mini-lab)	St. Catharines				♦



Appendix 2

Ministry of Environment and Energy contact list for initiatives involving pollution prevention

Automotive Parts Manufacturing Pollution Prevention project

Brian LeClair	Bruce Gillies
(416) 314-3878 / E-mail: leclaibr@ene.gov.on.ca	(416) 314-3900 / E-mail: gilliebr@ene.gov.on.ca

Canadian Chemical Producers' Association (CCPA) MOU

John Hewings	Ron Seca
(416) 314-7918 / E-mail: hewingjo@ene.gov.on.ca	(416) 314-3913 / E-mail: secar@gov.on.ca

Clean Marine partnership

Shiv Sud	Steve Neville
(416) 314-7936 / E-mail: sudsh@ene.gov.on.ca	(416) 314-3910 / E-mail: nevillst@ene.gov.on.ca

Clean production activities

George Zegarac
(416) 327-7702 / E-mail: zegarage@ene.gov.on.ca

Climate Change Voluntary Challenge and Registry program

Eric Lawton
(416) 323-5643 / E-mail: lawtoner@ene.gov.on.ca

Eco-Efficiency Resource Manual

Pauline Desroches	Simona Gasparetto
(416) 314-7991 / E-mail: desrocp@gov.on.ca	(416) 327-1484 / E-mail: gaspares@ene.gov.on.ca

Education, training and tools

Fred Granek
(416) 314-7893 / E-mail: granekfr@ene.gov.on.ca

Emery Creek Environmental Association Industrial Community partnership

Mike Giannotti
(416) 314-3899 / E-mail: giannomi@ene.gov.on.ca

Environmental management systems training and pollution prevention for hospitals

John Hewings	Ian Smith
(416) 314-7918 / E-mail: hewingjo@ene.gov.on.ca	(416) 314-7996 / E-mail: smithia@ene.gov.on.ca

Environment and Energy Conference of Ontario

Anna Rosati
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Ministry of Environment and Energy contact list for initiatives involving pollution prevention

External programs and policy liaison

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Food processing sector partnership

Fred Granek
(416) 314-7893 / E-mail: granekfr@ene.gov.on.ca

Green Clean dry cleaner demonstration project

Peter Campbell	Ron Seca
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Green Industry Strategy

Jacquie Maund
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Hamilton District Autobody Repair Association (HARA) partnership

Mike Giannotti
(416) 314-3899 / E-mail: giannomi@ene.gov.on.ca

Hamilton-Wentworth Air Quality Initiative (HAQI)

Dennis Corr	Eric Loi
(905) 521-7705 / E-mail: corrde@ene.gov.on.ca	(416) 323-5146 / E-mail: loier@ene.gov.on.ca

Industrial laundries partnership

Bruce Gillies
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Industrial Waste Diversion Program (IWDP)

Lee Orphan
(416) 314-7870 / E-mail: orphanle@ene.gov.on.ca

Lake Superior Bi-National program

Jake VanderWal	Don Murray
(807) 768-2104 / E-mail: N/A	(807) 475-1690 / E-mail: murraydo@ene.gov.on.ca

Mercury Elimination and Reduction Challenge (MERC)

Ian Smith
(416) 314-7996 / E-mail: smithia@ene.gov.on.ca



Ministry of Environment and Energy contact list for initiatives involving pollution prevention

Metal Finishing Industry Pollution Prevention project

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The Automotive Manufacturing Pollution Prevention project

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Operations Division

Ed Gill	Steve Neville
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Photo processing mini-labs partnership

Joanne DiCaro
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Pollution Prevention Pledge Program (P²)

John Hewings	Ron Seca
(416) 314-7918 / E-mail: hewingjo@ene.gov.on.ca	(416) 314-3913 / E-mail: secar@gov.on.ca

Printing and graphics sector project

Brian LeClair	Steve Neville
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Comprehensive Municipal Pollution Prevention (CMPP) project

Mike Giannotti	Cherlene Vieira
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Remedial Action Plan (RAP) program

Gail Krantzberg
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Resource conservation sector protocols

Trish Bolton
(416) 327-1454 / E-mail: boltont@ene.gov.on.ca

Restaurant sector partnership

Ron Seca
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Ministry of Environment and Energy contact list for initiatives involving pollution prevention

Scrap tire activities

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Smog plan

Dale Henry
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Technology partnerships

Gabriela Teodosiu
(416) 327-1258 / E-mail: teodosig@ene.gov.on.ca

Vehicle inspection and maintenance project

Michael Young
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Windsor Air Quality Pollution Prevention project

Jim Janse
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Walter Chan
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